

## Patent Claims

1. A method of preventing or minimizing dye redeposition onto textile fabrics by contacting the dyed fabric comprising cotton fibers with is a dye redeposition inhibitor during the dye removal process, **characterized in that** the dye redeposition inhibitor is a polyester, which is produceable by reacting at least the following monomers:

(A) one or more dicarboxylic acid compound(s),

(B) one or more diol compound(s) having from 2 to 6 carbon atoms, and

(C) polyetherols with one or two hydroxy groups having at least 6 oxygen atoms,

wherein the monomers (A), (B), and (C) result in more than 80 wt.% of the incorporated monomers.

2. The method according to claim 1, **characterized in that** the polyetherols (C) have average molecular weights from 500 to 10,000 g/mole, especially from 1,000 to 8,000 g/mole.

3. A method according to any one of the preceding claims, **characterized in that** the polyesters is furthermore produceable by using

(D) one or more polyol compound(s) with at least 3 OH groups having from 3 to 12 carbon atoms, especially glycerol.

4. The method according to claim 1, **characterized in that** the polyesters is produceable by reacting at least

(A) 20 to 50 mole% of one or more dicarboxylic acid compound(s),

(B) more than 0 to 30 mole% of one or more diol compound(s) having from 2 to 6 carbon atoms,

(C) 10.1 to 50 mole% of one or more water-dilutable polyetherol(s), which can be produced by the addition of one or more C<sub>2</sub>- to C<sub>4</sub>-alkylene oxide(s) to a C<sub>1</sub> to C<sub>18</sub> alcohol, especially a C<sub>1</sub> to C<sub>6</sub> alcohol, with one hydroxy group, wherein the alkylene oxide/alcohol mole ratio is in the range from 4 to 100 : 1, and

(D) 10.1 to 29.9 mole % of one or more polyol compound(s) having at least 3 OH groups.

5. The method according to claim 4, **characterized in that** 1 to 10 mole% of the diol compound (B) is incorporated.

6. A method according to any one of claims 4 or 5, **characterized in that** the average molecular weight of the polyester is less 5,000 g/mole, preferably from 2,000 to 5,000 g/mole.

7. A method according to any one of the preceding claims, **characterized in that** the dicarboxylic acid compounds (A) comprise terephthalic acid, isophthalic acid, and phthalic acid and their derivatives, especially terephthalic acid and its derivatives, preferably in a quantity of greater 90 mole% of terephthalic acid and its derivatives, based on the incorporated dicarboxylic acid compounds.

8. A method according to any one of the preceding claims, **characterized in that** independently of one another

(a) no tricarboxylic acid compounds and

(b) less than 10 wt.% of isophthalic acid or its derivatives, and especially no isophthalic acid or its derivatives are employed.

9. A method according to any one of the preceding claims, **characterized in that** the diol compound (B) is ethylene glycol and/or propylene glycol.

10. A method according to any one of the preceding claims, **characterized in that** the polyester is anionically modified by incorporation of anionic monomers and/or is capped with terminal groups.

11. A method according to any one of the preceding claims,

**characterized in that** the polyester is produceable by reacting at least

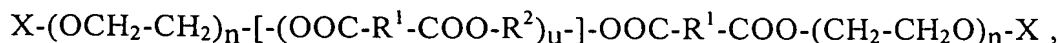
(A) terephthalic acid, wherein the terephthalic acid comes to more than 90 mole% of the dicarboxylic acid compounds employed,

(B) ethylene glycol, wherein the ethylene glycol comes to more than 90 mole% of the diol compounds employed, and

(C) polyethylene glycol having a molecular weight from 2,000 to 8,000 g/mole, wherein polyethylene glycol having a molecular weight from 2,000 to 8,000 g/mole comes to more than 90 wt.% of the polyetherols employed.

12. A method according to any one of the preceding claims, **characterized in that** the polyetherols (C) are alkylene oxide addition products of ethylene oxide, propylene oxide, butylene oxide or their mixtures to aliphatic C<sub>1</sub> to C<sub>18</sub> alcohols, preferably C<sub>1</sub> to C<sub>6</sub> alcohols, and/or water to water or methanol.

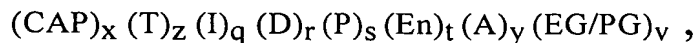
13. The method according to claim 1, **characterized in that** the polyesters are composed according to the formula



wherein each **R**<sup>1</sup> residue is a 1,4-phenylene residue, optionally substituted for mono- or di-C<sub>1</sub>-C<sub>3</sub>-alkyl; the **R**<sup>2</sup> residues are principally ethylene residues, 1,2-propylene residues, or mixtures thereof; each **X** represents independently of one another hydrogen, a C<sub>1</sub> to C<sub>12</sub> hydrocarbon residue, especially ethyl or methyl; each **n** is a number from 7 to 115, and **u** is a number from 3 to 10.

14. A method according to any one of claims 5 to 13, **characterized in that** the polyester or polyester blend is liquid at room temperature.

15. The method according to claim 1, **characterized in that** the average polyesters are composed according to the empirical formula



wherein

(CAP) represents terminal groups capping the polymer at its end and

a) sulfoaroyl groups,

b) groups of the formula  $MO_3-S-(O)_u-(CH_2)_p-(RO)_w-$ ,

wherein **M** represents a metal ion, ammonium ion, or substituted ammonium ion, **R** means ethylene or mixtures of ethylene and propylene, **u** is 0 or 1, **p** is 0 or 1, and **w** represents an integer from 1 to 100,

c) poly(oxyethylene)monoalkyl ether groups, wherein the alkyl group has from 1 to 24 carbon atoms and the polyoxyethylene group is comprised of 2 to 200 oxyethylene units,

d) acyl- and aroyl groups having from 4 to 40 carbon atoms,

e) hydroxyacyl- and hydroxyaroyl groups having from 2 to 25 carbon atoms,

f) poly(oxyalkylene)monoalkyl phenol ether, wherein the alkyl group has from 6 to 18 carbon atoms and the polyoxyalkylene group is comprised of 0 to 80 oxyalkylene units

g) and mixtures thereof, and x represents a number from 0 to 2,  
(T) is an arylene dicarbonyl group and z represents a number from 1 to 50,  
(I) is an internal anionic group and q represents a number from 0 to 30,  
(D) is an acetal group and r represents a number from greater 0 to 80,  
5 (P) means polyol groups having at least 3 -OH groups, s is a number from 0 to 80,  
wherein the polyol quantity is less than 30 mole%, related to the total mono-  
mer units,  
(En) is a poly(oxyalkylene)oxy group composed of 2 to 100 oxyalkylene groups,  
wherein t is a number from 0 to 25, and the alkylene groups have from 2 to 6  
10 carbon atoms,  
(A) is a 1,n-alkylene dicarbonyl group composed of 2 to 24 carbon atoms, and  
y represents a number from 0 to 15,  
(EG/PG) is an oxyethylene oxy- or oxypropylene oxy group or mixtures thereof,  
and v represents a number from 0 to 80, and  
15 wherein the polyesters have molecular weights from 500 to 100,000 g/mole,  
preferably from 1,000 to 20,000 g/mole.

16. The method according to claim 15, **characterized in that** (I) represents the sodium  
salt of the 5-sulfoisophthaloyl group.

17. A method according to any one of claims 15 or 16, **characterized in that**  
(CAP) represents the sodium salt of the 5-sulfoisophthaloyl group.

18. A method according to any one of claims 15 to 17,  
25 **characterized in that** the acetal group (D) is independently of one another:  
- the reaction product of a formyl ester with glycerol,  
- the reaction product of a dialdehyde with 2 moles of glycerol, and/or  
- the reaction product of a tetraalkoxy propane with 2 moles of glycerol.

19. A method according to any one of claims 15 to 18,  
30 **characterized in that** q, x, and y are 0.

20. A method according to any one of the preceding claims, **characterized in that**  
for the removal of dye abrasive stones and/or enzymes, especially at least cellu-  
35 lases, are put into contact with the fabric in order to achieve a stonewashed look.

21. A method according to any one of the preceding claims, **characterized in that** the dye redeposition inhibitor is put into contact with the fabric both during the stonewashing step and the preceding desizing step.

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22. A method according to any one of the preceding claims, **characterized in that** the dye part of which needs to be removed is indigo.

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23. A method according to any one of the preceding claims, **characterized in that** the polyetherols (C) have from 16 to 180 C<sub>2</sub> to C<sub>4</sub> alkylene oxide units.

24. A method according to any one of claims 1, 2, and/or 5 to 23, **characterized in that** the polyester is not made utilizing polyols having at least 3 OH groups.

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25. A method according to any one of the preceding claims, **characterized in that** the polyesters have molecular weights of less than 5,000 g/mole.

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26. Use of the polyester defined by any one of claims 1 to 19, 23, 24, and/or 25 for preventing or minimizing dye redeposition onto textile fabric during stonewashing or biostoning of indigo-dyed cotton fabrics.

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27. Indigo-dyed cotton fabric, **characterized in that** the indigo-dyed cotton fabric is produced in the presence of a polyester during a stonewashing or biostoning process in order to prevent dye redeposition and the polyester is defined by any one of claims 1 to 19, 23, 24, and/or 25.

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